ABSTRACT OF THE DISCLOSURE

Systems and methods are described for controlled alignment of catalyticaly grown nanostructures in a large-scale synthesis process. A method includes: generating an electric field proximate an edge of a protruding section of an electrode, the electric field defining a vector; and forming an elongated nanostructure located at a position on a surface of a substrate, the position on the surface of the substrate proximate the edge of the protruding section of the electrode, at least one tangent to the elongated nanostructure i) substantially parallel to the vector defined by the electric field and ii) substantially non-parallel to a normal defined by the surface of the substrate.